



RESEARCH ARTICLE.....

Effect of crop residue based complete feed on growth performance of crossbred calves (HF x Deoni)

Z.U. RAHMAN, K.R. MITKARI AND S.P. POUL

ABSTRACT..... An experiment was conducted to study the effect of crop residue based complete feed on growth performance and cost of feeding on crossbred (HF x Deoni) calves. Eighteen calves of six to eighteen months were selected and distributed in three groups. In control treatment (T_0), the sorghum straw and concentrate used separately, in T_1 treatment sorghum straw and concentrate used as complete feed whereas in T_3 treatment sorghum and wheat straw in equal proportion (1:1) to form complete feed. The total average body weight gain and average daily gain per animal under T_0 , T_1 and T_2 treatments were 21.16 kg and 220 g, 24.8 kg and 258g and 26.66 kg and 227 g, respectively. The differences were non-significant among the treatments. The differences in body length and chest girth gain were significantly superior in T_2 treatment than T_0 and T_1 . The cost of feeding per kg body weight gain under T_0 , T_1 and T_2 treatments was Rs.47.78, 41.72 and 37.58, respectively. Cost per kg body weight gain of crossbred calves was lower in complete feed (T_2), indicated that feeding of sorghum and wheat straw in equal proportion by forming complete feed is economical.

KEY WORDS..... Body measurement, Complete feed, Growth, Sorghum straw, Wheat straw

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INTRODUCTION.....

Acute shortage of grazing resources in the country can be managed by using complete feed formulated with locally available crop residue and agro-industrial by products. The nutritive value of crop residues and agro-industrial byproducts including non-conventional feeds can be improved if they are blended into the complete feed (Reddy, 1995). It is common observation in rural area that calves are not properly fed due to some reasons. The availability of green roughages either leguminous or non-leguminous for feeding of livestock is restricted

except only in certain parts of the country and hence the attempts have been made since long to develop suitable, simple, easily adaptable and cost effective processing technology for improvement of poor quality roughages for feeding of all categories of livestock.

Most of the crop residues form the bulk of basal diet of livestock in our country. These crop residues have practically no protein, low energy and minerals and poor digestibility due to lignocelluloses complex encapsulating the cell contents. Exclusive and indiscriminate feeding of oil cakes along with poor quality crop residues to the

milch cows, buffaloes and working bullocks is an invogue tradition in rural area since long and continued even today. Feeding of balanced concentrate mixture to the livestock has not been much adopted by the livestock owners.

To meet the needs of ever increasing human population we need to increase the productivity of animals, rather than increasing their number. Indian animals are basically dependent upon crop residues and other agricultural by products. The complete feeding system ensure improved utilization of nutrients from the crop residues and agro industrial byproducts, avoids refusal of unpalatable portion of plant residues, enables the use of locally available ingredients, offers uniform feed consumption. This feeding system can also effectively utilized during draught, flood and other scarcity situation. Considering the advantages of different methods for processing of complete diets, an attempt was made in this experiment to incorporate wheat straw and sorghum straw in the complete diet and process into mash and compare with a conventional diet in which the same concentrates and roughages were fed separately. Therefore, the present investigation is undertaken to study the effect of crop residues based complete feed on growth performance of crossbred calves.

RESEARCH METHODS.....

The present investigation was conducted at Cattle Cross Breeding Project (CCBP) in the department of Animal Science and Dairy Science, Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani. Eighteen crossbred calves (HF x Deoni) of six to eighteen months of age were selected for this experimental study. Six calves under each treatment were allotted. The allotment was such that there was similarity in age and body weight among the treatments.

The sorghum straw is a staple food for animals of this region which was fed *ad lib* and required concentrates in control and sorghum straw was mixed with concentrate alone and in combination with wheat

straw in equal proportion (50:50) to form the treatments as follows:

T₀ – Sorghum straw+Concentrate (As such separately)

T₁ – Sorghum straw+Concentrate to form the complete feed.

T₂ – Sorghum straw+Wheat straw (1:1) + Concentrate to form the complete feed.

The roughage to concentrate ratio in each treatment was maintained at 60:40 proportion. The concentrate used was the product of Maharashtra Agro Industries Development Corporation called as 'Calf Ration'.

The experiment was conducted from 6th February 2006 to 5th May 2006. The total experimental period was of 90 days. Weekly body weights of all experimental calves were recorded in kg on a standard balance. The linear body measurements *i.e.* body height, length and chest girth of animals were recorded fortnightly in centimeters. The data collected during investigation were subjected to statistical analysis by 'Complete Randomized Design' as per Snedecor and Cochran (1967).

RESEARCH FINDINGS AND ANALYSIS.....

The results obtained from the present investigation as well as relevant discussion have been summarized under the following heads :

Body weight gain :

The total body weight gain (Table 1) by the calves under treatment T₂ (26.66 ± 3.57 kg) was superior over treatment T₀ (21.16 ± 1.27 kg) and T₁ (24.83 ± 0.83 kg), but the differences observed were statistically non significant indicating that all the three treatments were at par for total body weight gain.

Daily body weight gain per animal :

It is revealed from Table 1 that the average daily body weight gain per animal over an experimental period for T₀, T₁ and T₂ were 220 ± 16.04, 258 ± 8.60 and 277

Table 1 : Body weight gain over an experimental period

Treatments	Total body weight gain over an experimental period (kg)	Daily body weight gain over an experimental period (g)
T ₀	21.16 ± 1.27	220 ± 16.04
T ₁	24.83 ± 0.83	258 ± 8.60
T ₂	26.66 ± 3.57	277 ± 37.26
S.E.±	3.049	34.31
C.D. (P=0.05)	NS	NS

NS=Non-significant

Table 2 : Average daily gain in linear body measurements

Treatments	Daily gain in body height (cm)	Daily gain in body length (cm)	Daily gain in chest girth (cm)
T ₀	0.0242	0.298	0.0356
T ₁	0.0341	0.0337	0.0360
T ₂	0.0298	0.0374	0.0380
S.E.±	0.0131	0.031	0.000286
C.D. (P=0.05)	NS	Significant	Significant

NS=Non-significant

Table 3 : Cost of feeding (Rs.)

Sr. No	Parameters	T ₀	T ₁	T ₂
1.	Total quantity of sorghum straw fed	884.28	905.76	472.57
2.	Total quantity of wheat straw fed	--	--	472.57
3.	Total quantity of concentrate fed	581.17	595.29	621.17
4.	Cost of feeding sorghum straw (Rs.)	1768.58	1811.52	945.14
5.	Cost of feeding wheat straw (Rs.)	--	--	472.57
6.	Cost of feeding concentrate (Rs.)	4300.65	4405.14	4596.65
7.	Total cost of feeding (Rs.)	6069.21	6216.66	6014.36
8.	Total gain in body weight	127.00	149.00	160.00
9.	Cost of feeding per kg live wt. gain (Rs.)	47.78	41.72	37.58

± 37.26 g, respectively. The average daily weight gain under treatment T₂ was superior over treatment T₀ and T₁, but the differences observed were statistically non-significant indicating all the three treatments were at par. The results were in accordance with the results of Parveen Kumar *et al.* (2004).

Linear body measurements :

It is observed from Table 2 that the average daily gain in body height under treatment T₀, T₁ and T₂ were 0.0242, 0.0341 and 0.0298 cm, respectively. The gain in height under treatment T₁ was superior over the treatment T₀ and T₂, but the differences observed were statistically non-significant indicating all the three treatments were at par. The increased body height was recorded by Hosmani and Srivastava (1989).

The average daily gain in body length under treatment T₀, T₁ and T₂ were 0.0298, 0.0337 and 0.0374 cm, respectively. The gain in length under treatment T₂ was statistically superior over T₀ and T₁. The significant differences in body length gain were recorded by Talokar (1993).

The average daily gain in chest girth under treatment T₀, T₁ and T₂ were 0.0347, 0.0355 and 0.0380 cm, respectively. The gain in chest girth under treatment T₂ was statistically superior over the treatment T₀ and T₁.

The non-significant differences in chest girth gain were recorded by Mahakhode and Karanjkar (2000).

Cost of feeding :

The total cost of feeding were Rs. 6069.21, 6216.66 and 6014.36 under treatment T₀, T₁ and T₂ treatments, respectively. The cost of feeding per kg body weight gain under treatment T₀, T₁ and T₂ were Rs. 47.78, 41.72 and 37.58, respectively (Table 3).

Conclusion :

Based on the above results, it may be concluded that feeding of sorghum straw and wheat straw in combination to form complete feed in equal proportion has been found to be better for crossbred calves. Growth rate of crossbred calves fed on complete feed *i.e.* T₂ was higher, but were at par with other treatments. Cost per kg body weight gain of crossbred calves was lower under T₂ treatment, indicates that feeding of sorghum straw and wheat straw in equal proportion by forming complete feed was economical.

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